PETROS Drilling Fluid System

System Overview

In the most technically demanding downhole conditions and wellbore geometries, PETROS consistently maintains the utmost in formation integrity and delivers the comparatively superior temperature stability, inhibition, lubricity and rates of penetration you expect from a high-performance invert emulsion drilling fluid.

Operators are going to increasingly extreme lengths to locate elusive oil and gas reserves these days, often well outside the functional jurisdiction of conventional water-based drilling fluids. In the current business climate operators are searching for the familiar, for reduced costs, and for reliability. Nothing should be left to chance & experimentation; no one wants unexpected challenges, fluid performance issues, product failures, or high mud bills. That's precisely when you need PETROS oil-based drilling fluid system.

PETROS fluids are time-proven, reliable, predictable, robust, well understood, easy to maintain, and resistant all but the very worst nature can throw at them. In the most technically demanding downhole conditions and wellbore geometries, PETROS consistently maintains the utmost in formation integrity and delivers the comparatively superior temperature stability, inhibition, lubricity and rates of penetration you expect from a high-performance invert emulsion drilling fluid. You can rely on PETROS fluids, even in the most daunting applications, to slash mud-related non-production time (NPT), and deliver exceptional ROP to lower overall well costs.

System Description

PETROS drilling fluids use the traditional No. 2 diesel oil as the external continuous phase base oil. As a result, PETROS fluids are imbued with excellent lubricity from spud to TD and a low coefficient of friction, which is virtually unmatched in the industry and doesn't waver. PETROS fluid excel when drilling deviated holes, and faults significantly reducing the occurrence of stuck pipe, and in extended reach wells and horizontal sections, where torque and drag can otherwise become problematic.

PETROS fluids eliminate water intrusion limiting clay swelling and migration and minimizing formation damage via permeability reduction. PETROS drilling fluids are an excellent choice when facing water soluble formations downhole such as salt stringers, gypsum, anhydrite, and the like. PETROS fluids provide innate protection against acid gasses, such as CO_2 and H_2S, as well as protection against lime initiated corrosion as it remains in the continuous oil phase.

Like any diesel-based mud, environmental limitations may restrict the use of PETROS drilling fluids in your area. Check with your local, state, and national regulatory agencies prior to drilling with diesel-based fluids.

Applications

- Primarily for Onshore Oil Well Drilling
- High Temperature – High Pressure Applications
- Extended and Ultra-Extended Reach Drilling (ERD)
- Highly Reactive Formations
- Directional Wells

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Features
- Unsurpassed fluid lubricity
- High application temperatures
- Chemically & rheologically stable
- Excellent filtration control
- Provides stable in-gauge wellbore
- Contamination resistant
- Inhibits gumbo clay & other reactive shales

Benefits
- Delivers outstanding ROP
- Reduces bit balling
- Low torque & drag
- Enhances wellbore stability
- Minimizes differential sticking
- Limits fluid-related NTP
- Lowers overall well costs
- Minimal formation damage

PETROS System - Typical Formulation Components

PETRO-MUL™ I	Primary emulsifier
PETRO-MUL II	Secondary emulsifier
PETRO-MUL I HT	Primary emulsifier (application > 350°F)
PETRO-MUL II HT	Secondary emulsifier (application > 350°F)
PETRO-WET™	Imidazoline-based oil wetting additive
ECOPHALT™ 300	Gilsonite fluid loss control additive
PREMA-VIS™	Organophilic bentonite, rheology modifier/gellant
Water	Dispersed phase
Calcium chloride	Water phase activity
Lime	Emulsifier activator, alkalinity control
NOV BAR	4.2 SG weighting agent

Typical PETROS Fluid Performance as a function of OWR and density

Density (lbs/gal)	9	12	15	9	12	15	9	12	15
Oil/Water Ratio	70 / 30			80 / 20			90 / 10		
AFTER HOT ROLL (@ 150°F)									
Plastic Viscosity	16	24	31	18	23	31	17	23	31
Yield Point	7	12	12	9	12	15	8	11	17
Gels (1 min, 10 min, 30 min)	4/ 5 / 6	5/ 7 / 8	5 / 7 / 8	3 / 5 / 6	4 / 6 / 7	4 / 5 / 7	3 / 5 / 6	3 / 5 / 6	4 / 5 / 7
HTHP Fluid Loss (mL)	4.2	3.6	4.4	2.6	2.8	2.4	3.6	2.8	3.6
Electric Stability	537	581	564	591	588	594	527	517	542
AFTER HOT ROLL (@ 250°F)									
Plastic Viscosity	17	26	32	20	22	34	19	22	36
Yield Point	7	11	13	9	14	16	10	14	20
Gels (1 min, 10 min, 30 min)	4/ 5 / 7	5/ 7 / 8	5 / 7 / 8	3 / 7 / 9	4 / 6 / 9	4 / 7 / 10	3 / 7 / 9	4 / 6 / 9	4 / 7 / 10
HTHP Fluid Loss (mL)	4.2	3.8	4.4	3.4	3.6	3.6	3.6	3.4	3.6
Electric Stability	498	436	567	591	568	592	534	527	558

To learn more about the extremely versatile PETROS drilling fluid system and how it can help meet all your drilling environmental and economic objectives contact your nearest WellSite Services FluidControl representative.

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